

leads us to place them below the Dicyemida. The subkingdom Vermes will therefore include the following classes:—

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| 1. Orthonectida. | 3. Trematoda. |
| 2. Dicyemida. | 4. Cestoda. |
| 5. Turbellaria (Planarians and Nemerteans). | |

Of the animals formerly classed with the preceding, some (Bryozoa, Annelida, and associated groups) are intimately allied to the true Mollusca, with which I unite them to form the subkingdom *Gymnotoca*; the others constitute a whole which may be called *Nematelmia*, including the Nematoida, Echinorhyncha, Desmoscolecida, Gastrotricha, &c. The Tunicata must be placed at the foot of the subkingdom Vertebrata.

The Orthonectida are Gastræada brought by parasitism to the state of *planula*. Their importance from the point of view of the *Gastræa*-theory is much greater than that of the *Physemaria*. These latter, in fact, only lead to the Cœlenterate branch, which terminates in a *cul-de-sac*; while the Orthonectida represent a stem of the Vermes, and consequently belong to the main trunk of the genealogical tree of the Metazoa.—*Comptes Rendus*, September 22, 1879, p. 545.

Remarks on *Orgyia*.

Prof. Leidy remarked that *Orgyia leucostigma*, which now seriously infests the shade trees of Philadelphia, especially the horse-chestnuts and silver maples, had recently passed into the moth stage. The trunks of the trees and the surrounding railing of the square opposite to the Academy exhibit a profusion of cocoons. In seeking for specimens of the male moth, he had collected only three, in a walk along one side of the square, from the railing, where hundreds of the wingless females were to be obtained as they rested with their foamy white masses of eggs on their cocoons. From the fewness of the males he was led to suspect that the females might perhaps, in many instances, deposit the eggs in an unfecundated condition. To ascertain if this were so, he collected several dozen cocoons with pupæ of females, distinguished by their comparatively robust character, and placed them in a covered box in his study in the third story of a back building, separated from the nearest place where there were other cocoons by the front building and the width of the street in front of his house. As the females came out of the cocoons, distended with eggs, these, with the exception of a few which appeared to be accidentally dropped, in several individuals were retained. After some days, as none of the females laid their eggs, the box was uncovered; and on the second morning subsequently several individuals had deposited masses of eggs, though no males were present in the box. However, on examining the vicinity, four male moths were detected on the outside of the curtain of the window in which the box had been placed, from which it was supposed that the females had been visited by males attracted during the night from the neighbourhood.

The case related reminded him that some years ago a collector of butterflies in the suburbs informed him that he frequently obtained male specimens of the *Cecropia* and *Luna* moths by pinning females to the side of the window, when, in the morning after, he would almost certainly find males in conjunction with them. The means by which the males thus find their mates at night and in out-of-the-way places were not obvious, as the insects appear to be incapable of producing sounds or scents that are appreciable to our senses.—*Proc. Acad. Nat. Sci. Philad.*, July 1879.

On Myrmecocystus mexicanus, Wesm.

Rev. H. C. M'Cook exhibited several glass formicaries containing a large number of living specimens of the honey-ant, *Myrmecocystus mexicanus*, Wesmael. These embraced three worker castes (major, minor, and dwarf), the honey-bearer, and the fertile queen. The artificial nests had been brought from the Garden of the Gods, Colorado, where the honey-ant had been discovered by Mr. M'Cook. They had previously been supposed to be confined to a more southern latitude. The nests are found on the tops or southern slopes of ridges. In exterior architecture they are small gravel-covered moundlets, truncated cones, pierced in the centre by a gate or perpendicular opening from three to six inches deep. The interior architecture was illustrated by numerous specimens brought from excavated nests. It consists of a series of underground galleries and chambers, cut through the gravel and sandstone to the distance of nearly eight feet in length, two to four feet beneath the surface, and about ten to twelve inches in width at the widest part.

The honey-bearers were found hanging in groups to the roofs of the honey-chambers by their feet, their large globular abdomens looking like bunches of small Delaware grapes. About eight to ten chambers, containing each an average of about thirty honey-bearers, were found. The workers cared for the honey-bearers when the chambers were opened, and dragged them into the unopened parts.

The ants proved to be nocturnal in their habits, remaining within doors until after sunset, about 7.30 P.M., each evening, when the workers issued forth in column and dispersed among the clumps of scrub oak (*Quercus undulata*). Here they sought the galls made by a species of *Cynips*, which grow abundantly on the bushes, and licked therefrom a sweet exudation which issued in small transparent beads from the surface. From 11.30 P.M. to about 3.30 A.M., when the first streakings of dawn began to appear, the workers returned home laden with the honey. This appears to be fed to the sedentary honey-bearers by disgorging it in the usual way, and remains within the globular abdomens as a store for future use. The economy of this habit appears to resemble that of the bee, the exception being that the bee's honey is stored within the inorganic substance of a waxen cell, while the ant's is lodged within the organic tissue of the living insect.—*Proc. Acad. Nat. Sci. Philad.*, Sept. 1879.